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city of CINCINNATI

CMC - Chapter 719
Wireless Communications Facilities
Detailed Design Guidelines & Examples

Department of Transportation and Engineering

May 09, 2016

city of CINCINNATI
TRANSPORTATION & ENGINEERING

City of Cincinnati Municipal Code

Chapter 719 – Wireless Communications Facilities

Detailed Design Guidelines and Examples

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City of Cincinnati Municipal Code

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Table of Contents:

City of Cincinnati Municipal Code

Chapter 719 – Wireless Communications Facilities

Detailed Design Guidelines and Examples

I. General Standards Applicable to Work under CMC Chapter 719

A. All Public Right-of-Way work shall be furnished and placed in compliance with the following general standards for construction in the public right-of-way::
   1. State of Ohio Department of Transportation, (ODOT), Construction and Material Specifications, (CMS); latest edition.
   2. ODOT CMS City of Cincinnati Supplement; (latest edition).
   3. City of Cincinnati DOTE Sidewalk Regulations Book; (latest edition).
   4. City of Cincinnati DOTE Street Restoration Manual; (latest edition).
   5. City of Cincinnati, DOTE Standard Drawings; (latest edition).
   6. City of Cincinnati, DOTE Traffic Engineering Division, Standard Traffic Signals & Street Lighting Construction Drawings; (latest edition).
   7. City of Cincinnati, DOTE CURB RAMPS Design Guidelines and Policy, Standard Drawings and Specifications; (latest edition).
   8. American Association of State Highway and Transportation Officials; (AASHTO), Standards and Guidelines; (latest editions).
   9. National Fire Protection Association 70 National Electric Code; (NFPA-70 NEC); (latest edition).

B. Copies of Items 1 – 7 listed above are available at:
   City of Cincinnati, Department of Transportation and Engineering
   Division of Engineering, Right-Of-Way Management Section
   City Hall, Room 428 - 801 Plum Street, Cincinnati, Ohio 45202-1980
   Tel: (513) 352-3463

Section 1. Existing Infrastructure Restoration Requirements

A. Streets and Alleys:
   1. Upon installation of the new work, the contractor shall restore the street and/or alley pavement as required in full and complete compliance with the approved DOTE Right-Of-Way Permit and Revocable Street Permit, (RSP), for use of the public Right-of-Way and the requirements of the City of Cincinnati Sidewalk Standards and Street Restoration Book.

B. Sidewalks:
   1. Upon installation of the new work, the contractor shall restore all concrete walks, driveway aprons, and "collector strips" as required in full and complete compliance with the requirements of the following:
      a. The approved DOTE Right-Of-Way Permit.
      b. The approved DOTE Revocable Street Permit, (RSP), for use of the public Right-of-Way.
      c. City of Cincinnati Sidewalk Standards and Street Restoration Book.
      d. DOTE Central Business District, (CBD), Streetscape Standards; (as applicable).
      e. DOTE Special Improvement District, (SID), Streetscape Standards; (as applicable).
      f. DOTE Neighborhood Business District, (NBD), Streetscape Standards; (as applicable).

2. Upon installation of the new work, the contractor shall restore all tree lawns and/or sod strips with topsoil and sod in compliance with ODOT CMS standards.

Section 2. General Standard Pole Installation Location Restrictions and Requirements

Note: For the purposes of this section, the word or term "pole" shall mean to include the pole itself and any associated but separate above ground system accessory item including equipment boxes, cabinets, meters, etc.

A. General Restrictions and Requirements:
   1. For any site specific location, the City may require that the service carrier provide proof that a need exists for a pole in the requested location prior to granting approval.
   2. Only (1) pole per block may exist. This includes any previously installed poles from other companies and/or carriers. A block consists of both sides of the street, major intersection to major intersection.
   3. The centerline of all new poles shall align with the centerline of all other adjacent poles which is usually approximately 2'-0" from the back of curb – verify centerline location in field. The applicant shall submit proposed the pole location based upon an estimate of the existing established centerline. At all times, the face of the pole shall be a minimum of 2'-0" from the face of curb.

B. Vehicular Traffic Restrictions and Requirements:
   1. A new pole shall not be located / installed within 50'-0" of an intersection.
   2. Any new pole shall be located 6'-0" minimum from all alley entrances and exits and from driveway curb cuts.
   3. A new pole shall not obstruct motorist's sight lines and/or vehicle visibility at corners, alley entrances and exits, and at driveway entrances and exits.

C. Infrastructure and Utility Restrictions and Requirements:
   1. A new pole shall not obstruct or remove existing traffic control infrastructure; including curb control signs, parking meters, vehicular traffic signals, pedestrian traffic signals, street lighting, barricade reflectors, etc.
   2. A new pole shall not obstruct worker access to any above-ground or below ground traffic infrastructure equipment for traffic control, street lighting, or public transportation.
   3. A new pole shall not obstruct emergency access to any fire hydrant.
   4. A new pole shall not obstruct worker access to any above-ground or below ground public or private utility agency equipment, including valve boxes.

D. Public Transportation Restrictions and Requirements:
   1. A new pole shall not obstruct pedestrian access to any public transportation vehicle, shelter, or street furniture at designated stops.
   2. Any new pole shall be located a minimum of 4'-0" from all bicycle racks and street furniture.

E. Sidewalk Pedestrian Access Dimensional Requirements and Clearances:
   1. A new pole shall not obstruct pedestrian access to any curb ramp.
   2. All new pole installations shall be located to provide a clear path of pedestrian travel by maintaining a minimum of 6'-0" between the pole and any permanent adjacent item, including vehicular and pedestrian traffic control signal poles, traffic control signs, street light poles, street trees, open tree wells, street furniture, sidewalk café enclosures and/or enclosure gate swings.

F. Building Restrictions and Requirements:
   1. A new pole shall not be located in front of a historic landmark or a building of architectural importance.
   2. A new pole shall not be located directly in front of an entrance to a building.
   3. A new pole shall not obstruct or block pedestrian access to buildings at passage doors, sidewalk doors, and fire escapes.
   4. A new pole shall not obstruct permanent building signs, tenant signs, or display windows.

G. Parkland and Natural Landscape Restrictions and Requirements:
   1. A new pole shall not be located on a designated scenic street or overlook.
   2. A new pole shall not obstruct a property owner's existing view.

Section 3. General Standard Pole Installation Material and Structural Requirements

A. General Requirements:
   1. All poles shall comply with the applicable sections of ODOT CMS City of Cincinnati Supplement Item # 1318 – Poles and Supports.

B. Pole Materials:
   1. New wood poles may be installed at locations permitted in compliance with both the Pole Installation Location Restrictions and Requirements and the Detailed Design Guidelines contained in this Policy.
   2. New metal Poles may be installed at locations permitted in compliance with both the Pole Installation Location Restrictions and Requirements and the Detailed Design Guidelines contained in this Policy.
   3. New pole design calculations and plans shall be prepared, stamped, sealed, and signed by a Professional Structural Engineer licensed in the State of Ohio for DOTE permit application submittal, review, and approval.
   4. New metal poles and accessory items shall be fabricated of non-rusting material and/or hot-dipped galvanized steel and finished as required to prevent and eliminate the staining of adjacent sidewalk and building surfaces.

C. New Wood Pole Footings and Foundations:
   1. New wood poles shall be direct buried.
   2. Pole bury depth and supporting material specifications for each installation shall be determined by and stamped, sealed, and signed by a Professional Engineer licensed and registered by the State of Ohio for DOTE permit application submittal, review, and approval.

D. New Metal Pole Footings and Foundations:
   1. Reinforced concrete pier design calculations and plans shall be prepared, stamped, sealed, and signed by a Professional Structural Engineer licensed in the State of Ohio for DOTE permit application submittal, review, and approval.
   2. Pole Footing / Foundation Anchor Bolts:
      a. Material: Steel (high strength) per ASTM A36.
      b. Type: Threaded J-Type / L-Type.
      c. Size: Diameter and length as designed, stamped, sealed, and signed by a Professional Structural Engineer licensed in the State of Ohio.
      d. Finish: Hot-dip galvanized per ODOT CMS Item 711.02
      e. All anchor bolts shall be concealed from view by pole boot or cover.

Section 4. General Standard Pole Installation Fiber-Optic and Electrical System Requirements

A. Wiring:
   1. All wiring shall be furnished and placed per ODOT CMS City Supplement Item # 1323.
   2. All underground wiring and optical fiber cable shall be encased in conduit.

B. Underground Conduit:
   1. Located Behind Curb / Beneath Sidewalk:
      a. All conduits shall be SCH 40 PVC encased in concrete per City Supplement Item # 1321.
   2. Located Behind Curb / Beneath Driveway Aprons:
      a. All conduits shall be SCH 40 PVC encased in RMC, (Rigid Metal Conduit), per City Supplement Item # 1321
   3. Located Behind Curb / Within Tree Wells:
      a. All conduits shall be SCH 40 PVC encased in RMC, (Rigid Metal Conduit), per City Supplement Item # 1321.
   4. Located in Front of Curb / Beneath Street:
      a. All conduits shall be SCH 40 PVC encased in RMC, (Rigid Metal Conduit), per City Supplement Item # 1321.

C. Above-Ground Conduit:
    1. All existing and new wood and metal pole installations – Refer to the following Detailed Design Guidelines contained in this Chapter.

D. Ground Rod shall be 1" Ø X 10'-0" L copper clad steel (high strength) per ASTM A325 in compliance with ODOT CMS City Supplement Item # 1320.

II. Type-I and Type-II Collocation Modification Installations:

Section 1. Collocation – General Notes

A. City Expectation and Requirements:
    1. The City desires and encourages the collocation of separately owned and operated wireless communication facilities onto a single wireless structure.
    2. The first, initial installation service carrier owner / operator shall make accommodations in the design, construction, and installation of their structure and equipment to accommodate the potential, future addition of facilities by a second, separate service carrier owner / operator.
    3. For any site specific location, the City may require proof that future collocation has been planned for prior to granting approval.
    4. For any site specific location where a wireless structure exists within close proximity, the City may require that each service carrier provide proof that collocation has been investigated and that collocation can or cannot be accommodated prior to granting approval.

Section 2. Type-I Modifications – Collocation onto Existing Wireless System Supporting Structures Through Minor Modifications

A. Definition – Collocation through Minor Modifications:
    1. The applicant is responsible for determining if the proposed modifications constitute a minor modification and complete their application submittal accordingly.
    2. A minor modification is one that **does not**:
        a. Appreciably change the original installation's inherent system design type, composition, size, or structure.
        b. Substantially increase the size or number of the original installation's required equipment.
        c. Significantly or negatively alter the original installation's environmental impact.

B. Collocation – Design of Minor Modifications:
    1. New facilities collocating through minor modification of an existing wireless structure shall coordinate and match exactly the original system's visible organization, layout, design, equipment types, sizes, materials, color, etc.
    2. All collocation modifications shall follow the regulations for installations contained in these Detailed Design Guidelines and Examples that governed the original installation type and location.
    3. Antenna Locations:
        a. All first installed antennas shall be mounted onto the top of the pole in order to maintain and continue the pole silhouette.
        b. All collocated additional antennas shall be mounted onto the side of the pole parallel to roadway. Antennas shall not be located perpendicular to the roadway between the curb and the pole. Antennas may only be located perpendicular to the roadway on the back face of the pole, above the sidewalk provided all clearances are met.

B. Collocation – Design Standards:
    1. Collocation shall not negatively impact the structural integrity of the existing pole assembly and shall comply with all applicable local, state, and federal codes and regulations.
    2. Design calculations and plans for collocation onto existing wireless structures shall be prepared, stamped, sealed, and signed by both a Professional Structural Engineer and Professional Electrical Engineer licensed in the State of Ohio for DOTE permit application submittal, review, and approval.

Section 3. Type-II Modifications – Collocation onto Existing Wireless System Supporting Structures through MajorI Modifications

A. Definition – Collocation through Major Modifications:
    1. The applicant is responsible for determining if the proposed modifications constitute a major modification and complete their application submittal accordingly.
    2. A major modification is one that **does**:
        a. Appreciably change the original installation's inherent system design type, composition, size, or structure.
        b. Substantially increase the size or number of the original installation's required equipment.
        c. Significantly or negatively alter the original installation's environmental impact.
B. Collocation – Design of Minor Modifications:
    1. New facilities collocating through major modification of an existing wireless structure shall coordinate and match exactly the original system's physical installation if possible or shall produce a new design incorporating the proposed and required changes that coordinates with the existing original installation's design objectives and goals.
    2. All collocation modifications shall follow the regulations for installations contained in these Detailed Design Guidelines and Examples that governed the original installation type and location.
C. Design Standards:
    1. Collocation shall not negatively impact the structural integrity of the existing pole assembly and shall comply with all applicable local, state, and federal codes and regulations.
    2. Design calculations and plans for collocation onto existing wireless structures shall be prepared, stamped, sealed, and signed by both a Professional Structural Engineer and Professional Electrical Engineer licensed in the State of Ohio for DOTE permit application submittal, review, and approval.

III. Type-III Collocation Modification Installations:

Section 1. Collocation – General Notes

A. City Expectation and Requirements:
    1. Refer to notes in contained above in Type-I and Type-II Collocation Modification Installations; Section Collocation – General Notes.
    2. Refer to following notes regarding existing pole ownership and existing pole types.

Section 2. Type-III Modifications – Collocation onto Existing Privately Owned Non-Wireless System Supporting Structures

A. Existing Privately Owned Wood Service Supply and Transmission Utility Poles:
    1. Pole Ownership:
        a. The applicant shall be responsible for determining ownership of the existing pole.
    2. City vs. Pole Owner Standards:
        a. The applicant shall be responsible for investigating, discovering, and determining City and private pole owner standards which may vary or conflict.
        b. The applicant shall be responsible for compliance with the most restrictive regulations.
    3. Existing Pole Type, Size, and Height:
        a. The applicant shall be responsible for verifying the type, size, and height of the existing wood utility pole.
        b. Existing pole height and equipment size and/or location may impact collocation design.

4. Existing Pole Equipment:
    a. The applicant shall be responsible for verifying the type, size, and location of all existing pole mounted equipment and all existing zone dimensions and required off-set clearances with both the pole owner and the equipment owner.
5. Required Permits:
    a. The applicant shall be responsible for obtaining permit approval from both the City and the pole owner prior to installation.
6. Collocation – Design:
    a. Refer to pole owner for their design standards, specifications, and requirements.
    b. Refer to the attached Plan and Drawing Appendix in these Detailed Design Guidelines and Examples for City DOTE design intent standards, specifications, and requirements.
7. Design Standards:
    a. Collocation shall not negatively impact the structural integrity of the existing pole assembly and shall comply with all applicable local, state, and federal codes and regulations.
    b. The applicant shall be responsible for identifying design conflicts, proposed resolutions, and the application of standards in their permit submittal.
    c. Design calculations and plans for collocation onto existing wireless structures shall be prepared, stamped, sealed, and signed by both a Professional Structural Engineer and Professional Electrical Engineer licensed in the State of Ohio for DOTE permit application submittal, review, and approval.

B. Existing Privately Owned Metal Service Supply and Transmission Utility Poles:
    1. Note – The collocation of new wireless system facilities onto existing privately owned metal service supply and transmission utility poles shall not be permitted.

C. Other Existing Privately Owned Structures:
    1. Collocation onto other types of existing privately owned structures may be permitted contingent upon the proposed structure, facility type, location, concealment methods, and the characteristics of the surrounding environment.
    2. Installation proposed for privately owned structures located on private property require Zoning and Building Code permit approval.

Section 3. Type-III Modifications – Collocation onto Existing City Owned Non-Wireless System Supporting Structures

A. Existing City Owned Metal Light Poles:
    1. Standard CBD MOLT System Pole with an attached Luminaire:
        a. Pole Collocation Design:
            i. Collocation of all new system equipment shall be located in an adjacent underground vault in compliance with DOTE standards.
            ii. Refer to the attached Plan and Drawing Appendix in these Detailed Design Guidelines and Examples for City DOTE design intent standards, specifications, and requirements.
            iii. Collocation shall not negatively impact the structural integrity of the existing pole assembly and shall comply with all applicable local, state, and federal codes and regulations.
        b. Design Standards:
            i. The applicant shall be responsible for identifying design conflicts, proposed resolutions, and the application of standards in their permit submittal.
            ii. Design calculations and plans for collocation onto the existing light poles shall be prepared, stamped, sealed, and signed by both a Professional Structural Engineer and Professional Electrical Engineer licensed in the State of Ohio for DOTE permit application submittal, review, and approval.

2. Standard Tapered Pole with an attached Mast Arm and Luminaire:
    a. Pole Collocation Design:
        i. Collocation of all new system equipment may be located in an adjacent underground vault, in an adjacent above-ground cabinet, or in a pole mounted equipment cabinet / shroud in compliance with DOTE standards.
        ii. Refer to the attached Plan and Drawing Appendix in these Detailed Design Guidelines and Examples for City DOTE design intent standards, specifications, and requirements.
        iii. Collocation shall not negatively impact the structural integrity of the existing pole assembly and shall comply with all applicable local, state, and federal codes and regulations.
    b. Design Standards:
        i. The applicant shall be responsible for identifying design conflicts, proposed resolutions, and the application of standards in their permit submittal.
        ii. Design calculations and plans for collocation onto the existing light poles shall be prepared, stamped, sealed, and signed by both a Professional Structural Engineer and Professional Electrical Engineer licensed in the State of Ohio for DOTE permit application submittal, review, and approval.

B. Existing City Owned Metal Traffic Control Signal Poles:
    1. Note – The collocation of new wireless system facilities onto existing City owned metal traffic control signal poles shall not be permitted.

C. Other Existing City Owned Structures:
    1. Collocation onto other types of existing City owned structures may be permitted contingent upon the proposed structure, facility type, location, concealment methods, and the characteristics of the surrounding environment.
    2. Installation proposed for City owned structures located on City owned private property require Zoning and Building Code permit approval.

IV. Type-IV Wireless Communications Facility Installations on New Towers:

Section 1. Complying New Wood Pole Installation Locations

A. Restricted Locations:
   1. DOTE reserves the right to restrict the installation of any new wood pole installation based upon the built and/or natural environmental character of the proposed location.
   2. New wood pole installations shall not be located within the following districts defined in the City of Cincinnati Municipal Code Title 14 – Zoning Code:
      a. The Downtown Development District, including all Sub-districts.
      b. RF-R Riverfront Residential / Recreation Districts.
      c. All Historic Districts.
      d. All Hillside Overlay Districts.
      e. All Park and Recreation Districts that are primarily designed as being more urban and active.
   3. New wood pole installations shall not be located within the following designated Underground Utility Districts:
      a. The Central Business District, (CBD) and/or the Downtown Development District, as defined in the Cincinnati Municipal Code Title 14 – Zoning Code; including all sub-districts.
      b. All other Underground Districts as designated by DOTE or as established through private development.
   4. New wood pole installations shall not be located in any Neighborhood Business District, (NBD), as defined by the Department of Community and Economic Development, (DCED), which contains a previously implemented streetscape improvement project.
   5. New wood pole installations shall not be located in any Zoning District on a street served by an existing underground utility system and/or an existing gas light system.

B. Reviewable Locations:
   1. DOTE reserves the right to review and restrict the installation of any new wood pole installation located on a case by case basis within the following districts defined in the City of Cincinnati Municipal Code Title 14 – Zoning Code:
      a. Planned Development Districts.
      b. Interim Development Control Overlay Districts.
      c. Urban Design Overlay Districts.

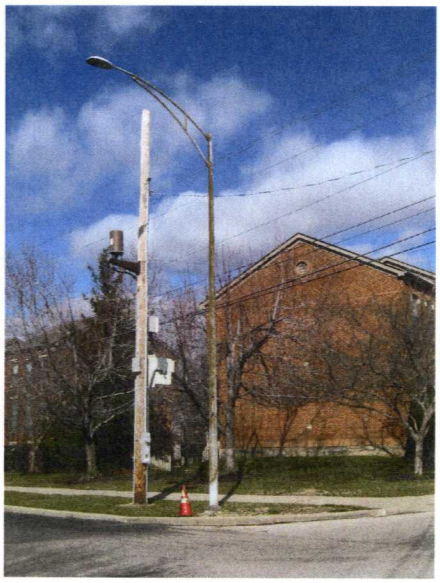
C. Allowable Locations:
   1. New wood pole installations may be installed in the following districts defined in the City of Cincinnati Municipal Code Title 14 – Zoning Code that contain streets served by an existing wood pole supported overhead utility system:
      a. All Single-Family Districts.
      b. All Residential Mixed and Multi-Family Districts.
      c. All Office Districts.
      d. All Institutional – Residential Districts.
      e. All Commercial Districts.
      f. Urban Mixed Districts.
      g. All Manufacturing Districts.
      h. RF-C Riverfront Commercial Districts.
      i. RF-M Riverfront Manufacturing Districts.
      j. All Park and Recreation Districts that are primarily designed to be more suburban and passive and provide a densely wooded environmental background.
   2. New wood pole installations may only be installed in a NBD, as defined by DCED, that does not contain a previously implemented streetscape improvement project and that is served by an existing wood pole supported overhead utility system.

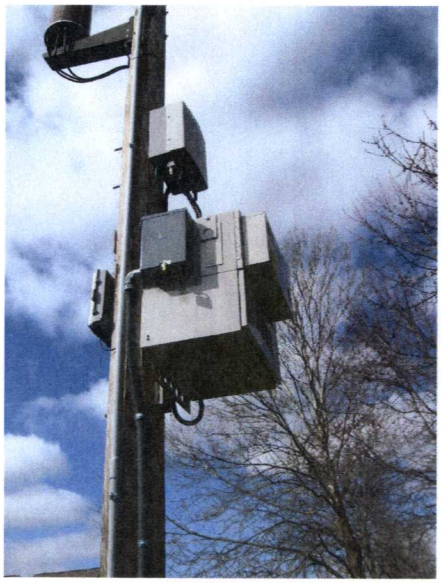
a. Note – Should a new streetscape improvement project be implemented that includes undergrounding overhead utilities, the wireless communications facility carrier, owner / operator shall replace the wood pole with a new approved stealth type metal pole at their cost as permitted and described by these Detailed Design Guidelines & Examples.

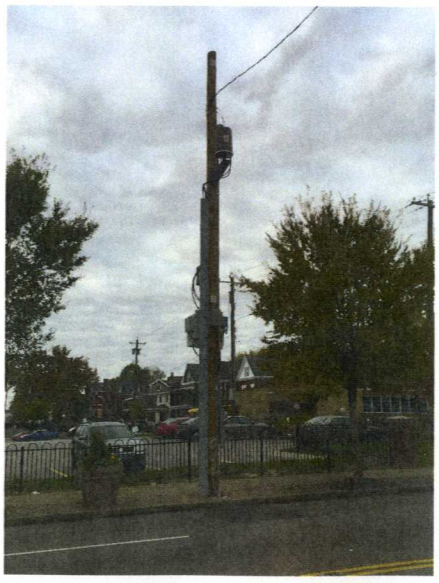
Section 2. Non-Complying New Wood Pole Installation Design

A. Rejected New Wood Pole Installation Designs:

1. New Wood Pole Installations displaying any of the following items shall not be permitted; (see example photographs below):
    a. 1st installed antenna incorrectly located on a side mounted bracket arm.
    b. Multiple equipment boxes, cabinets, enclosures, and/or shrouds creating a hodgepodge, obtrusive composition and silhouette.
    c. Off-set equipment pole attachment.
    d. Exposed wires and/or cables.
    e. Exposed equipment wiring and/or cabling connections.
    f. Exposed loosely wound and hung surplus wiring and/or cabling.
    g. Unorganized and haphazard equipment placement, conduit runs, and connections.
    h. Large attached conduit covers.
    i. Unpainted equipment boxes, cabinets, enclosures, shrouds, and/or conduit.
    j. Unsuppressed equipment and/or operation noise.
2. Example Photographs of **Unacceptable** New Wood Pole Installations:







Section 3. Complying New Wood Pole Installation Design

A. Approved New Wood Pole Installation Designs:
   1. Only new wood pole installations as described below shall be approved and permitted.
      a. Refer also to the following photograph example contained in this Section 8.
      b. Refer also to the attached Plan and Drawing Appendix in these Detailed Design Guidelines and Examples for City DOTE design intent standards, specifications, and requirements.
   2. The new wood pole attached wireless system shall be designed and installed with the goal and objective of creating a cleanly organized, streamlined, pole assembly of equipment and connections containing the following:
      a. The 1st installed antenna shall be pole top mounted.
      b. 2nd and 3rd installed antennas as required shall be mounted to the side of the pole.
      c. (1) 18" W (max) X 18" D (max) X Length as Required all-in-one equipment enclosure cabinet / shroud concealing all system equipment complete with both internal cable management and integrated sound insulation and suppression system.
      d. (1) 8" W / 12" W (max) X 12" D (max) X Length as Required all-in-one service electric meter service box with integrated over-current protection and disconnect complete with internal cable management.
      e. All system equipment mounted in-line on (1) side of the pole.
      f. All system equipment cabinet enclosures mounted and attached tight to the pole.
      g. All wiring and/or cabling concealed within conduit, equipment enclosures and/or shrouds.
      h. All wiring and/or cabling connections concealed within equipment enclosures and/or shrouds.
      i. All surplus wiring and/or cabling concealed within equipment enclosures and/or shrouds.
      j. Small diameter PVC conduit runs that are minimal in number and organized.
      k. All equipment boxes, cabinets, enclosures, shrouds, antennas(s), and/or conduit painted to match the wood pole.
   2. Note – The carrier owner / operator's contractor shall install the smallest state of the art system items for the following:
      a. All-in-one equipment enclosure cabinet / shroud.
      b. Antenna(s) – all types.
      c. Service electric meter service box with integrated over-current protection and disconnect.

Section 4. Complying New Metal Pole Installation Locations

A. Required Locations:
   1. Only New Option-1 and/or Option-2 New Metal Pole Installations shall be located within the following districts defined in the City of Cincinnati Municipal Code Title 14 – Zoning Code:
      a. The Downtown Development District, including all Sub-districts.
      b. RF-R Riverfront Residential / Recreation Districts.
      c. All Historic Districts.
      d. All Hillside Overlay Districts.
      e. All Park and Recreation Districts.
   2. Only New Option-1 and/or Option-2 DAS Metal Pole Installations shall be located within the following designated Underground Utility Districts:
      a. The Central Business District, (CBD).
      b. All other Underground Districts as designated by DOTE or as established through private development.
   3. Only New Option-1, Option-2, and/or Option-3 DAS Metal Pole Installations shall be located in any Neighborhood Business District, (NBD), as defined by the Department of Community and Economic Development, (DCED), which contains a previously implemented streetscape improvement project. Option selection by DOTE staff.
   4. Only New Option-1, Option-2, and/or Option-3 DAS Metal Pole Installations shall be located in any Zoning District on a street served by an existing underground utility system and/or an existing gas light system.

B. Reviewable Locations:
   1. DOTE reserves the right to review and require the installation of any New Option-1, Option-2, and/or Option-3 DAS Metal Pole Installation located on a case by case basis within the following districts defined in the City of Cincinnati Municipal Code Title 14 – Zoning Code:
      a. Planned Development Districts.
      b. Interim Development Control Overlay Districts.
      c. Urban Design Overlay Districts.

C. Allowable Locations:
   1. All New Option-1, Option-2, and/or Option-3 DAS Metal Pole Installations may be installed in any the following districts defined in the City of Cincinnati Municipal Code Title 14 – Zoning Code:
      a. All Single-Family Districts.
      b. All Residential Mixed and Multi-Family Districts.
      c. All Office Districts.
      d. All Institutional – Residential Districts.
      e. All Commercial Districts.
      f. Urban Mixed Districts.
      g. All Manufacturing Districts.
      h. RF-C Riverfront Commercial Districts.
      i. RF-M Riverfront Manufacturing Districts.

Section 5. Option–1: Complying New Metal Pole Design

A. New Metal Poles with Adjacent / Remote Below Grade Vault Located Equipment;
   1. Only new tapered metal pole installations as described shall be approved and permitted.
      a. Refer also to the following photograph example contained in this Section 8.
      b. Refer also to the attached Plan and Drawing Appendix in these Detailed Design Guidelines and Examples for City DOTE design intent standards, specifications, and requirements.
   2. Pole Type / Shape:
      a. Round, tapered with the smallest base diameter permissible per structural analysis.
   3. Pole Bases and Boots:
      a. Decorative pole bases shall not be required.
      b. All anchor bolts shall be concealed from view by a pole boot or cover.
   4. Pole Height:
      a. Where applicable, all pole heights shall match adjacent post top light poles.
      b. Maximum pole height shall be 30'-0".
      c. Height variance shall require submittal of proof that a higher pole is needed.
   5. Pole Finish:
      a. Hot-dip galvanized per ODOT CMS Item 711.02.
      b. Paint per ASTM # D6386-10.
      c. Powder Coat per ASTM # D7803-12.
      d. Note: The owner / contractor may select either a paint or powder coat finish system in compliance with ASTM standards.
   6. Pole Finish Paint Color:
      a. Black – Federal Color # 27038 (Black-Semi Gloss).
   7. Pre-Cast Concrete Vault – Sidewalk:
      a. Vault Design: Compliance with DOTE Sidewalk Regulations Book and Street Restoration Manual; (latest editions).
      b. Dimensions: Width as Required X Length as Required X Depth as Required.
         i. Note: Any vault located within a 4'-0" sidewalk collector strip shall have a 4'-0" maximum width to match.
      c. Grating Material: Stainless Steel.
      d. Grating Design: Bar design in compliance with ADA walking surfaces, and with DOTE Sidewalk Regulations Book and Street Restoration Manual; (latest editions).
   8. Pre-Cast Concrete Vault – Roadway:
      a. Design: Compliance with DOTE Street Restoration Manual; (latest editions).
      b. Dimensions: As Required.
   9. Vault Equipment – The vault shall contain and conceal the following:
      a. All electric service equipment including but not limited to the meter, over-current protection, disconnect and ground rod.
      b. All system equipment cabinet(s) / enclosure(s) including but not limited to the electric power source, electric panel, breakers, main disconnect, amplifier(s), receiver(s), radio(s), ventilation, wiring / cabling, battery back-up.
      c. Vault located system equipment cabinet(s) / enclosure(s) shall contain sound insulation and suppression system.
   10. Allowable External Pole Equipment:
      a. (1) Remote Digital Electric Meter located at 5'-0" above adjacent grade at plan orientation angle 270°; (smallest device possible).
      b. Pole top mounted antenna with pole attachment assembly and cable connection shroud.

11. Internal Pole Equipment:
    a. All wiring / cabling and their connections shall be internal and concealed from view.

B. Photograph Example – New Tapered Metal Pole with Adjacent / Remote Below Grade Vault Located Equipment:

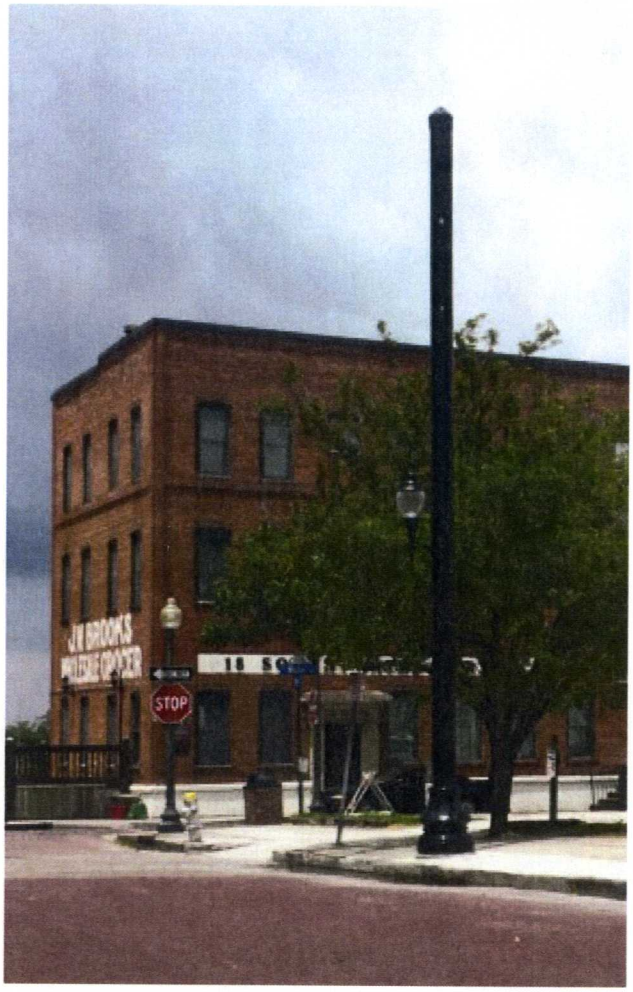
1. Notes:
    a. Vault with concealed equipment not shown in photograph example.
    b. All equipment shall be located within the vault and concealed from view.
    c. The manual electric service meter, over-current protection and disconnect shall be located in the vault with only a remote digital meter display attached on the pole at 5'-0" O.C. above the adjacent grade shall be attached to the outside of the pole.
    d. All conduits, wiring, cabling, and their connections be located underground and internally within the pole and shall be concealed from view.

C. Refer Also To:
    1. The attached Plan and Drawing Appendix in these Detailed Design Guidelines and Examples for City DOTE design intent standards, specifications, and requirements.

Section 6. Option–2: Complying New Metal Pole Design

A. "Stealth" Integrated Concealment Metal Poles with Integrated Concealed Equipment:
   1. Only new integrated concealment metal pole installations as described shall be approved and permitted.
      a. Refer also to the following photograph example contained in this Section 8.
      b. Refer also to the attached Plan and Drawing Appendix in these Detailed Design Guidelines and Examples for City DOTE design intent standards, specifications, and requirements.
   2. "Stealth" Integrated Concealment Metal Pole Type Standard of Design:
      a. An all-in-one 12" diameter, (maximum), modular, stackable, power and radio integrated concealment pole, complete with all required system equipment items located internal to, and concealed by the pole, including but not necessarily limited to:
         i. Electric Meter & Main Service with Over-Current Protection & Disconnect.
         ii. Power Source.
         iii. Electric Panel with Breakers.
         iv. Battery Back-up as applicable.
         v. Amplifier(s).
         vi. Receiver(s).
         vii. Radio(s).
         viii. Ventilation System.
         ix. Wiring / Cabling and Conduit.
      b. A pole top mounted integrated antenna.
      c. An integrated sound insulation and suppression system.
   3. Pole Bases and Boots:
      a. Decorative pole bases shall not be required.
      b. All anchor bolts shall be concealed from view by a pole boot or cover.
   4. Pole Height:
      a. Where applicable, all pole heights shall match adjacent post top light poles.
      b. Maximum pole height shall be 30'-0".
      c. Height variance shall require submittal of proof that a higher pole is needed.
   5. Pole Finish – Proprietary / Non-Proprietary:
      a. Proprietary: Pole manufacturer's proprietary finish system
      b. Non-Proprietary: Hot-dip galvanized per ODOT CMS Item 711.02.
      c. Non-Proprietary: Paint per ASTM # D6386-10; (owner / contractor option).
      d. Non-Proprietary: Powder Coat per ASTM # D7803-12; (owner / contractor option).
      e. Note: For non-proprietary pole assembly installations, the pole owner may select either a paint or powder coat finish system in compliance with ASTM standards.
   6. Pole Finish Paint Color:
      a. Black – Federal Color # 27038 (Black-Semi Gloss).
   7. Allowable External Pole Equipment:
      a. (1) Integrated meter viewing window panel or (1) pole mounted remote digital electric meter usage reading display unit.
      b. Note: All conduits, wiring, cabling, and their connections shall be located underground and internally within the pole.
      c. Note: DOTE reserves the right to require the addition of supplemental of (1) or more decorative lighting fixtures and bracket arms to match adjacent streetscape lighting system. The lighting bracket arm shall be a fabricated with or welded to the pole prior to pole finishing. All wiring and wiring connections shall be internal to the pole.

B. Photograph Example – A new all-in-one 12" diameter, (maximum), modular, stackable, power and radio integrated concealment pole, complete with all required system equipment items located internal to, and concealed by the pole with an integrated pole top mounted antenna.



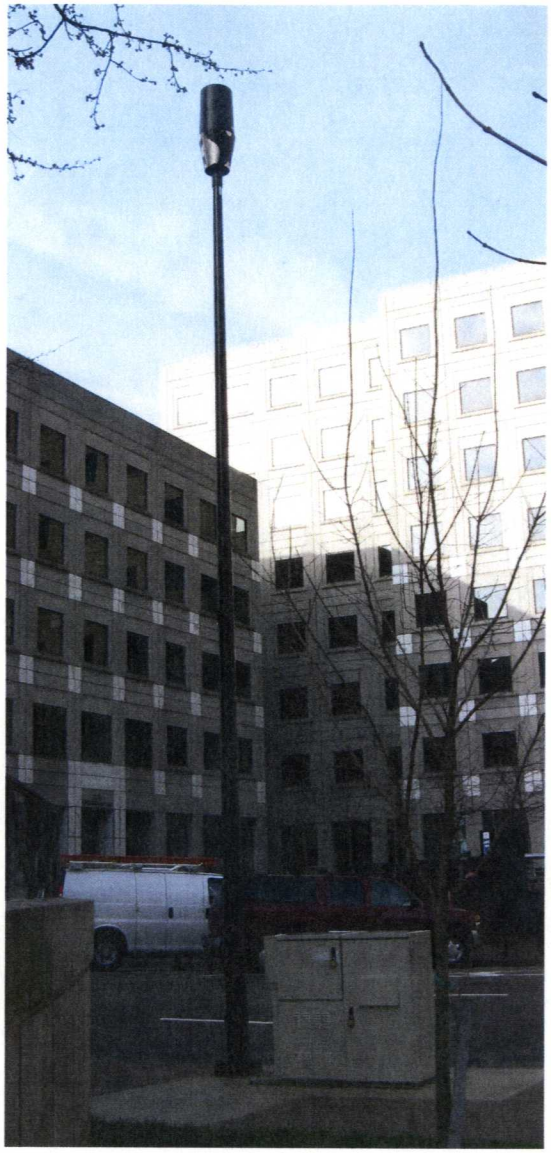
1. Notes:
    a. Decorative pole bases shall not be required.
    b. Decorative light fixture and bracket requirement, type, number, and placement shall only be required upon review and direction for specific locations as determined by DOTE staff.
    c. The integrated meter viewing window panel or pole mounted remote digital electric meter usage reading display unit.
    d. All other equipment shall be located internally within the pole and shall be concealed from view.
    e. All wiring / cabling and their connections shall be located underground and internally within the pole and shall be concealed from view.

C. Refer Also To:
    1. The attached Plan and Drawing Appendix in these Detailed Design Guidelines and Examples for City DOTE design intent standards, specifications, and requirements.

Section 7. Option–3: Complying New Metal Pole Design

A. New Metal Poles with Adjacent Above Ground Equipment Enclosure Cabinet / Shroud:
   1. Only new tapered metal pole installations as described shall be approved and permitted.
      a. Refer also to the following photograph example contained in this Section 8.
      b. Refer also to the attached Plan and Drawing Appendix in these Detailed Design Guidelines and Examples for City DOTE design intent standards, specifications, and requirements.
   2. Pole Type / Shape:
      a. Round and tapered with the smallest base diameter permissible per structural analysis.
   3. Pole Bases and Boots:
      a. Decorative pole bases shall not be required.
      b. All anchor bolts shall be concealed from view by a pole boot or cover.
   4. Pole Height:
      a. Where applicable, all pole heights shall match adjacent post top light poles.
      b. Maximum pole height shall be 30'-0".
      c. Height variance shall require submittal of proof that a higher pole is needed.
   5. Pole Finish:
      a. Hot-dip galvanized per ODOT CMS Item 711.02.
      b. Paint per ASTM # D6386-10.
      c. Powder Coat per ASTM # D7803-12.
      d. Note: The owner / contractor may select either a paint or powder coat finish system in compliance with ASTM standards.
   6. Pole Finish Paint Color:
      a. Black – Federal Color # 27038 (Black-Semi Gloss).
   7. Ground Mounted Equipment Cabinet / Shroud:
      a. The manual electric meter service box with integrated over-current protection and disconnect shall be located within the equipment cabinet / shroud and concealed from view. Only a remote digital meter display attached on the pole at 5'-0" O.C. above the adjacent grade shall be attached to the outside of the pole.
      b. All conduits, wiring, cabling, and their connections shall be located underground and internally within the pole.
      c. Note: The equipment cabinet enclosure / shroud shall include an integrated sound insulation and suppression system.
   8. Internal Pole Equipment:
      a. All wiring / cabling and their connections shall be located underground and internally within the pole and shall be concealed from view.
      b. Note: DOTE reserves the right to require the addition of supplemental of (1) or more decorative lighting fixtures and bracket arms to match adjacent streetscape lighting system. The lighting bracket arm shall be a fabricated with or welded to the pole prior to pole finishing. All wiring and wiring connections shall be internal to the pole.

B. Photograph Example – New Tapered Metal Pole with an Adjacent / Remote Above-Ground All-In-One Equipment Cabinet / Shroud.



1. Notes:
   a. All equipment, including the manual electric service meter, over-current protection and disconnect, shall be located within the equipment cabinet enclosure / shroud and concealed from view. Only a remote digital meter display attached on the pole at 5'-0" O.C. above the adjacent grade shall be attached to the outside of the pole.
   b. The equipment cabinet enclosure / shroud shall include an integrated sound insulation and suppression system.
   c. All conduits, wiring, cabling, and their connections be located underground and internally within the pole and shall be concealed from view.
   d. DOTE reserves the right to require the addition of supplemental of (1) or more decorative lighting fixtures and bracket arms to match adjacent streetscape lighting system. The lighting bracket arm shall be a fabricated with or welded to the pole prior to pole finishing. All wiring and wiring connections shall be internal to the equipment cabinet, internal to the pole, and underground, and shall be concealed from view.

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Chapter 719 – Wireless Communications Facilities

Detailed Design Guidelines and Examples

Plan and Drawing Appendix

Table of Contents: **Page No.**